DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20350-1000

SECNAVINST 5000.36
DON CIO
1 November 2001

SECNAV INSTRUCTION 5000.36

From: Secretary of the Navy
To: All Ships and Stations

Subj: DEPARTMENT OF THE NAVY DATA MANAGEMENT AND INTEROPERABILITY

Ref: (a) Title 40, United States Code, Chapter 25, as amended (codifies Public Law 104-106, "National Defense Authorization Act for FY 1996," Division E (Clinger-Cohen Act))
(b) Title 10, United States Code, Chapter 131, Section 2223 (codifies Public Law 105-261, "National Defense Authorization Act for FY 1999," Section 331)
(c) Defense Appropriation Act for FY 2001 (Pub. L. No. 106-259), Section 8102
(d) DoD Directive 4630.5, "Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems", of 12 Nov 92
(e) DoD Directive 8320.1, "DoD Data Administration", of 26 Sep 91
(f) Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Runtime Specification (I&RTS), Version 4.0, of 25 Oct 99
(g) SECNAV Instruction 5000.2B, "Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs and Major and Non-Major Information Technology Acquisition Programs", of 6 Dec 96
(h) DON Information Technology Standards Guidance (ITSG), Version 99-1, of 5 Apr 99
(i) Joint Vision 2020, "America's Military: Preparing for Tomorrow"
(j) CJCSI 6212.01B, "Interoperability and Supportability of National Security Systems, and Information Technology Systems", of 8 May 00
(k) DoD 8320.1-M-1, "Data Standardization Procedures", of Apr 98

Encl: (1) Definitions
(2) DON Functional Data Areas and Functional Data Managers
(3) Acronyms

1. Purpose. To establish policy and assign responsibilities in accordance with references (a) through (k); to unify Department of the Navy (DON) Data Management and Interoperability (DMI) efforts; to provide the processes, procedures, products, and tools to achieve data interoperability; and to implement reference (e).

2. Background

a. Reference (a) establishes Chief Information Officer (CIO) responsibilities for Information Technology (IT) and mandates improvement in day-to-day mission processes and proper use of IT to support those improvements. The term IT includes National Security Systems (NSS).

b. Reference (b) states the CIO of a military department, with respect to the military department concerned, shall: (1) review budget requests for all IT and NSS; (2) ensure that IT and NSS are in compliance with standards of the federal government and the Department of Defense (DoD); (3) ensure that IT and NSS are interoperable with other relevant IT and NSS of the federal government and the DoD, and (4) coordinate with the Joint Staff with respect to IT and NSS.

c. Reference (c) states that none of the funds appropriated under the Defense Appropriations Act for Fiscal Year (FY) 2001 may be used for a mission critical or mission essential IT system (including a system funded by the defense working capital fund) that is not registered with the CIO of the DoD. A major automated information system may not receive Milestone A approval, Milestone B approval, or Milestone C approval within the DoD until the CIO certifies, with respect to that milestone, that the system is being developed in accordance with reference (a). The CIO may require additional certifications, as appropriate, with respect to any such system.

d. Reference (d) states that forces for joint and combined operations must be supported through compatible, interoperable, and integrated Command, Control, Communications and Intelligence (C3I) systems that can support operations worldwide throughout

the entire spectrum of conflict. It charges the Heads of the DoD Components to ensure the policy is followed during the requirements validation process, acquisition, deployment, and operations of systems and forces. Reference (d) is under revision to include information interoperability and supportability, thereby implementing the Clinger Cohen Act. It will direct an outcome-based approach to ensure interoperability of IT and NSS throughout the DoD. It establishes that requirements for information interoperability be characterized in a family of systems or system of systems Joint Mission Area (JMA) context for all IT and NSS capabilities.

e. Reference (e) requires that DoD Data Management be implemented to support operations and decision making with data that meets the mission need in terms of availability, accuracy, timeliness and quality. It also cites the need to structure the information to enable horizontal as well as vertical sharing of data in the DoD.

f. Reference (f) describes the technical requirements for using the Defense Information Infrastructure (DII) Common Operating Environment (COE) to build and integrate systems. Reference (e) specifies levels of DII compliance that are tied to levels of interoperability for both applications and Database Segments.

g. Reference (g) states the DON CIO is responsible for developing and issuing IT management policies, architectures and standards; evaluating the performance of IT programs on the basis of applicable performance measurements; and advising the Secretary of the Navy (SECNAV) regarding whether to continue, modify or terminate an IT program.

h. Reference (h) provides DON Information Management (IM) guidance for information requirements definition, information interchange, database management and interoperability, and data metrics.

i. Reference (i) is the capstone joint warfighting strategic plan; it focuses on cross-services systems interoperability and Information Superiority.

j. Reference (j) establishes policies and procedures for the Joint Chiefs of Staff interoperability requirements certification of Mission Need Statements (MNSs), Capstone Requirements Documents (CRDs), and Operational Requirements Documents (ORDs) required by reference (g). It details a methodology to develop interoperability key performance parameters (KPPs) derived from a set of top-level Information Exchange Requirements (IERs) as required by reference (g) and based on the format and content of the integrated architecture products described in the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Architecture Framework.

k. Reference (k) provides procedures for the development, approval, and maintenance of DoD Data Standards necessary to support the policies of DoD Data Administration as established by reference (e).

3. Scope and Applicability. This instruction addresses Data Management and Interoperability (DMI) as it applies to databases and automated system data exchange within and across warfighting and business systems. The policy herein applies to all Navy and Marine Corps organizations including the operating forces and supporting establishment.

4. Definitions. Enclosure (1) includes definitions applicable for this document.

5. Discussion. DON systems are often narrowly focused, not fully interoperable, and support a single function or organization. Users are often required to assemble information from incompatible and sometimes conflicting data sources. Data interoperability requirements provide the operational focus for Data Management. As depicted in Figure 1, information requirements satisfaction is dependent on the ability of automated systems to exchange data effectively and efficiently. Metadata standards provide the foundation for data interoperability. The use of Authoritative Data Sources (ADSs) to populate databases helps ensure data consistency among diverse systems.

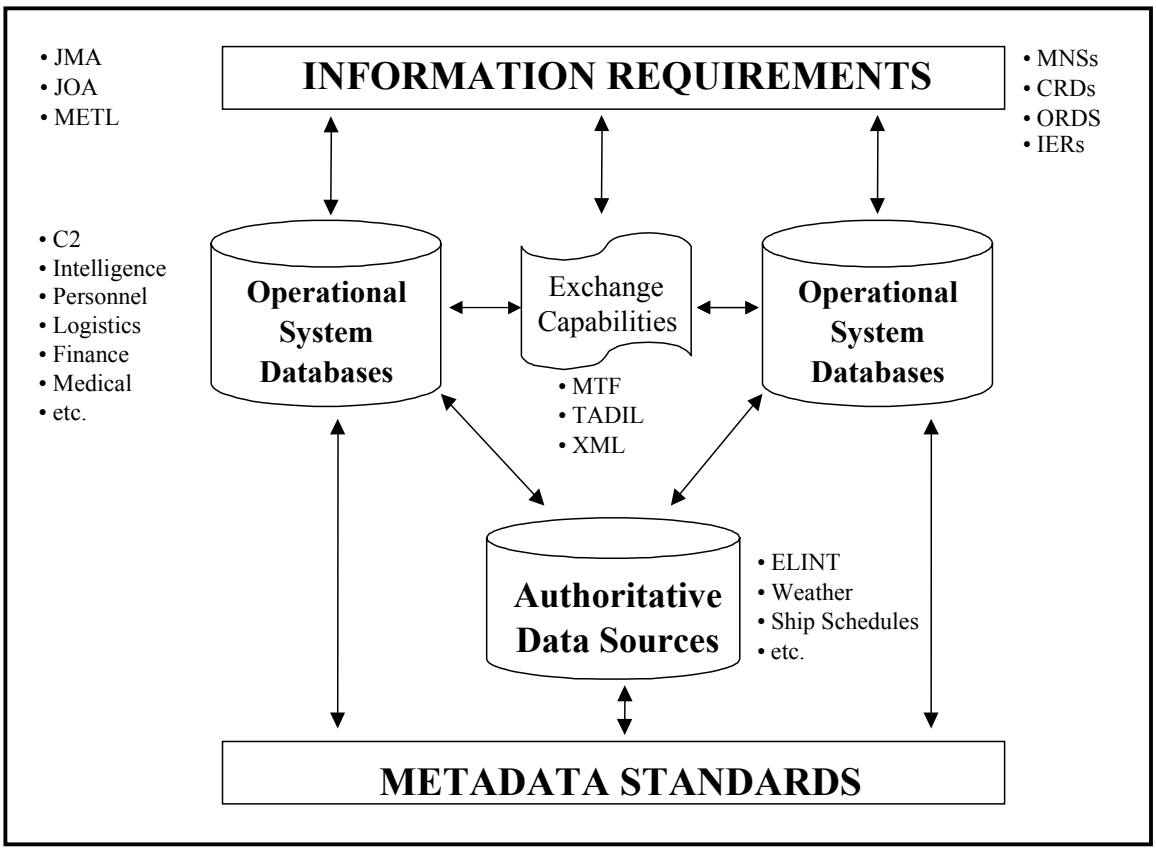

Figure 1: Data Management and Interoperability

Data Standards are essential to achieve system interoperability and data integration across the enterprise. Data Standards issues are complex because Data Management practices reflect diverse functional cultures and regional operational procedures. As the DON migrates to a network centric environment, there is a need to reconcile diverse cultures and practices to achieve interoperability and integration.

The requisite first step is to capture the knowledge and preserve the investment inherent in existing systems. Systems databases and interfaces need to be inventoried, and their associated Metadata need to be recorded in a standard format and stored in a repository for ready access by DON system developers. This systems documentation provides the baseline for follow-on analysis. This baseline will be used to determine data inconsistencies, assess data redundancies among systems,

improve near term interoperability, and support collaborative Data Standards development. It also will provide the Data Management foundation to support DON Revolutions in Business and Military Affairs.

6. Goal. The overall goal of DON DMI is to establish and maintain the Infrastructure and processes to realize the most effective and efficient use of information across the enterprise.

7. Policy. It is DON policy to:

a. Establish a management and engineering Infrastructure responsible for DMI.

b. Unify DON Data Management efforts to ensure effective and efficient data interoperability within the DON, with other services and DoD agencies, and with allied forces.

c. Eliminate duplicative, obsolete, and non-secure applications, and their associated databases.

d. Register and certify DON IT and NSS Systems in accordance with reference (c).

e. Establish and implement common Data Management processes and procedures to solve data interoperability problems, including the registration of system/application data (Metadata) and data exchange formats.

f. Designate and use ADSs to minimize duplication or ambiguity and to increase data integrity.

g. Provide assured and interoperable data services for data access, storage and retrieval.

h. Provide management visibility into data life-cycle costs.

i. Reduce system life-cycle costs through the use of Data Standards, Database Segments, consolidation of redundant databases, and the elimination of unique systems data interfaces.

j. Fund DMI Infrastructure requirements through the Planning, Programming and Budgeting System (PPBS) process in accordance with published DMI policy/guidance.

8. Responsibilities. The pervasive nature of data requires the collective and proactive involvement of Senior Managers, Resource Sponsors, Data Producers, System Architects and Acquisition Managers, Test and Evaluation Commands, Data Managers and data users. Figure 2 depicts the interrelationships among the respective DMI managers.

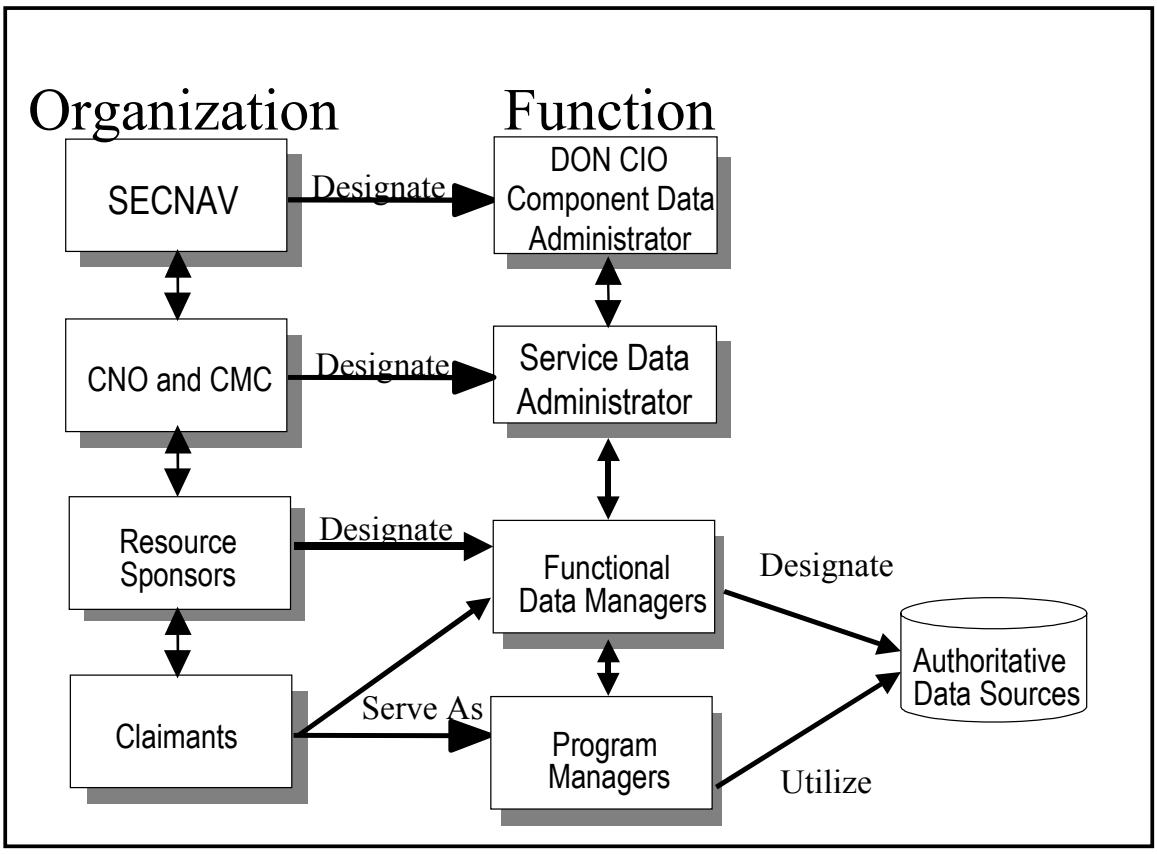

Figure 2: DMI Interrelationships

The interrelationships in Figure 2 are implemented as follows:

a. The DON CIO shall:

(1) Issue DMI policy/guidance to the Navy and Marine Corps.

(2) Develop and maintain a DON DMI Strategic Plan to provide focus on unifying DMI efforts across the DON enterprise and visibility into the policy contained herein;

(3) Ensure requisite processes, procedures, products, tools and metrics are in place to resolve systems data interoperability and cross-functional issues, including the designation and adjudication of ADSs;

(4) Establish guidelines and priorities for DON Data Management planning and implementation including establishment of a DON DMI repository, and the consolidation and synchronization of Data Management, architecture, and interoperability efforts;

(5) Coordinate with the Navy and Marine Corps to identify DMI priorities for potential funding by resource sponsors during programming (i.e., Program Objective Memorandum (POM) development phase of PPBS);

(6) Review IT budget submissions for compliance with DMI related policy/guidance;

(7) Certify that IM/IT efforts are in compliance with government and DoD Data Standards as specified in reference (b); and

(8) Act as the Component Data Administrator for the DON as specified in reference (e).

b. The Assistant Secretary of the Navy (ASN) (Research, Development and Acquisition) (RD&A) shall:

(1) Enforce implementation of DMI policies and procedures for acquisition programs; and

(2) Include DON DMI priorities as provided per paragraph 8.a (4) above when evaluating acquisition actions.

c. Chief of Naval Operations (CNO) and the Commandant of the Marine Corps (CMC) shall:

(1) Ensure DMI Infrastructure and requirements are funded through the PPBS process in accordance with DON CIO policy/guidance;

(2) Designate respective Navy and Marine Corps Data Administrators;

(3) Issue joint instructions/orders to implement the policy contained herein; and

(4) Provide policy and guidance to ensure that all authorized users are provided appropriate access to ADSs, as required.

d. Navy and Marine Corps Data Administrators shall:

(1) Support the DON CIO in the development and maintenance of the DON DMI Strategic Plan;

(2) Develop and maintain a Joint DMI implementation plan to resolve systems data interoperability and cross-functional issues; and

(3) Ensure service organizations are kept current on Data Management issues and methodologies and provide appropriate training.

e. DON, Navy, and Marine Corps Resource Sponsors shall:

(1) Ensure mission critical and mission essential IT systems are registered with the DoD CIO in accordance with reference (c), using procedures established by the DON CIO;

(2) Ensure all requirements documentation for naval and Joint systems include data interoperability requirements;

(3) Ensure DMI requirements/priorities are funded in the POM;

(4) Consider DON DMI priorities as provided per paragraph 8.a (4) above when evaluating programs;

(5) Ensure systems incorporate approved International, National and DoD Data Standards, and the use of functional ADSs; and

(6) As Functional Area Managers, designate Functional Data Managers as defined in enclosure (1). A listing of Functional Areas is provided in enclosure (2).

f. Functional Data Managers shall:

(1) Implement functional processes to produce and monitor the use of data within and across functional activities, information systems, and computing and communications infrastructures:

(2) Assist Program Managers and other system developers in registering system/application (Metadata) and data exchange formats and maintaining the Metadata baseline;

(3) Develop and maintain Functional Area views of the DON Data Architecture;

(4) Develop candidate DoD standard data elements in coordination with the respective DoD Functional Data Administrator (FDAd) in accordance with reference (k);

(5) Coordinate with applicable stakeholders to ensure DoD proposed Data Standards are useable by DON systems; and

(6) Designate ADS for their respective functional areas and maintain that designation in the DMI Repository (DMIR) using processes and procedures approved by the DON CIO.

g. Navy and Marine Corps organizations including operating forces and supporting establishments that develop systems shall:

(1) Implement DMI processes, procedures, and tools;

(2) Ensure all systems procurements document naval and Joint data interoperability requirements, and incorporate approved Data Standards and Database Segments. This requirement includes systems developed under rapid-prototyping and fleet-initiative programs;

(3) Register and maintain systems metadata in the DMIR using the processes and procedures approved by the DON CIO;

(4) Identify ADSs in coordination with the appropriate functional manager using processes approved by the DON CIO;

(5) Designate a single point of contact to coordinate DMI issues;

(6) Include systems data interoperability metrics in Test and Evaluation Master Plans;

(7) Implement the requirements of this instruction; and

(8) Provide user feedback to Navy and Marine Corps Data Administrators to improve DMI procedures.

9. Action.

a. The DON CIO shall publish a DMI Strategic Plan annually by 31 May of each year beginning in FY 2001.

b. The DON CIO shall coordinate with CNO and CMC to identify DMI priorities for funding by resource sponsors during the POM and Program Review (PR) cycles.

c. The CNO and CMC shall designate Service Data Administrators and Functional Data Managers within 30 days of the date of this instruction.

d. The Navy and Marine Corps Data Administrators shall identify DMI current (execution) year, budget year and outyear funding requirements and priorities for submission to the cognizant major claimant and the applicable resource sponsor(s) for appropriate funding consideration.

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DEFINITIONS

Authoritative Data Source. Data products including databases that have been identified, described, and designated by appropriate Department of Navy (DON) Functional Data Managers, U.S. Military Services and Department of Defense (DoD) Components as the authorized producer of data for a given requirement.

Data. A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means. (Federal Information Processing Standards (FIPS) Pub 11-3) Data are distinct pieces of information, usually formatted in a special way. All software is divided into two general categories: data and programs. Programs are collections of instructions for manipulating data.

Data Administration. The responsibility for definition, organization, supervision, and protection of data within an enterprise or organization. (National Bureau of Standards (NBS) Special Publication 500-152)

Data Administrator. A person or group that ensures the utility of data used within an organization by defining data policies and standards, planning for the efficient use of data, coordinating data structures among organizational components, performing logical data base designs, and defining data security procedures. (NBS Special Pub 500-152)

Data Architecture. A framework for organizing the interrelationships of data (based on an organization's missions, functions, goals, objectives, and strategies), providing the basis for the incremental, ordered design and development of systems based on successively more detailed levels of data modeling. (DoDD 8320.1)

Data Management. Data Management is a sub-set of Information Management (IM). It deals with the creation, use, sharing, and disposition of data as a resource critical to the effective and efficient operation of functional activities. The structuring of functional processes to produce and monitor the use of data within functional activities, information systems, and computing and communications infrastructures. (DoDD 8000.1 modified)

Data Management, for the purpose of this instruction, adds executive and operational dimensions to the Data Administration functions as defined in DoD Directive 8320.1 of 26 September 1991. The executive dimension assures Data Management and Interoperability (DMI) decisions reflect senior management goals and objectives. The operational dimension assures the Data Management Infrastructure and functions are linked to current and future operational requirements.

Data Standard. A data element that has been through a formal analysis to reach agreement on its name, meaning, and characteristics, as well as its relationship to other standard data elements. Much like a common language, Data Standards enable processes and their supporting information systems to be integrated across functions, as well as within them, and improve the quality as well as the productivity of enterprise performance. (DEPSECDEF Memo of 13 October 1993, "Accelerated Implementation of Migration Systems, Data Standards, and Process Improvement")

Database. A collection of interrelated data, often with controlled redundancy, organized according to a schema to serve one or more applications; the data are stored so that they can be used by different programs without concern for the data structure or organization. A common approach is used to add new data and to modify and retrieve existing data. (FIPS Special Pub 11-3)

Database Segment. A standard method for packaging a physical database for incorporation into Shared Data Engineering (SHADE). Database Segments are packaged like any other Common Operating Environment (COE) segment. (Defense Information Infrastructure (DII) COE Interface and Run Time Specification (I&RTS), Version 4.0)

Functional Area. A Functional Area encompasses the scope (the boundaries) of a set of related functions and data for which an Office of the Secretary of Defense (OSD) Principal Staff Assistant or the Chairman of the Joint Chiefs of Staff has DoD-wide responsibility, authority, and accountability. A Functional Area (e.g., personnel) is composed of one or more functional activities (e.g., recruiting), each of which consists of one or more functional processes (e.g., interviews). Also known as a business area. (DoD 8320.1-M)

Functional Area Manager. See Resource Sponsor.

Functional Data Manager. Organizations designated by the respective Resource and Program Sponsors to produce and control structuring of data within functional activities, information systems, and computing and communications infrastructures. Examples include: Naval Meteorology and Oceanography Command for meteorological and oceanographic data, Office of Naval Intelligence for characteristics and performance data of non-U.S. equipment and merchant ships, Naval Security Group for cryptologic information and data, DC/S Installations & Logistics (I&L) for Marine Corps logistics.

Information. (1) Facts, data, or instructions in any medium or form. (2) The meaning that a human assigns to data by means of the known conventions used in their representation. (Joint Pub 1-02)

Information Exchange Requirement. The requirement for information to be passed between and among forces, organizations, or administrative structures concerning ongoing activities. Information Exchange Requirements identify who exchanges what information with whom, as well as, why the information is necessary and how that information will be used.

Information Interoperability. The exchange and use of information in any form, electronically that enables effective operations for both warfighting and combat support areas both within the DoD and external activities, and synchronizes both material and non-material aspects.

Information Management. The creation, use, sharing, and disposition of information as a resource critical to the effective and efficient operation of functional activities. The structuring of functional processes to produce and control the use of data and information within functional activities, information systems, and computing and communications infrastructures. (DoDD 8000.1)

Information Superiority. The capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary’s ability to do the same.

Information Technology. Any equipment, or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term "equipment" in this definition means equipment used by a Component directly, or used by a contractor under a contract with the Component, which requires the use of such equipment, or requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product. The term "IT" includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources. The term "IT" includes National Security System (40 U.S.C. 1401 and reference (a), Sec 5002).

Infrastructure for DMI. The basic underlying resources used for Data Management including; data, Data Architecture and models, Data Management technology, Metadata, processes, procedures, and Data Standards. There are two components of the DON DMI Infrastructure:

- **Management Component.** DON Chief Information Officer (CIO), Assistant Secretary of Navy for Research, Development and Acquisition (ASN (RDA)), Navy and Marine Corps Data Administrators, Board of Representatives, and Data Management Integrated Product Team (IPT).

- **Engineering Component.** DON Data Architecture which includes information requirements and models; and the DON DMI Repository which includes a systems catalog, systems database structures, data element definitions, transfer formats and standards, and data sources and users.

Interoperability. The ability of systems, units or forces to provide services to, and accept services from, other systems, units or forces, and to use the services so exchanged to enable them to operate effectively together (CJCS Pub 1-02).

Metadata. Information describing the characteristics of data; data or information about data; descriptive information about an organization's data, data activities, systems, and holdings. (DoDD 8320.1-M-1)

National Security System. Any telecommunications or information system operated by the United States Government, the function, operation, or use of which: (a) involves intelligence activities; (b) involves cryptologic activities related to national security; (c) involves command and control (C2) of military forces; (d) involves equipment that is an integral part of a weapon or weapons system; or (e) subject to limitation below, is critical to the direct fulfillment of military or intelligence missions. Limitation — Item (e) does not include a system that is to be used for routine administrative and business applications (including payroll, finance, logistics, and personnel management applications).

Program Manager. The organization responsible for the development and execution of a solution to a validated operational requirement.

Resource Sponsor. The organization responsible for planning and identifying funding.

Revolution in Business Affairs (RBA). RBA is a strategy that encompasses the following objectives: (1) sense of urgency to act among the top leaders, (2) broad leadership commitment and involvement, (3) engagement of leaders at several levels in initiatives across the Department, (4) early achievement of improvements, (5) a process that harnessed the best practices in strategic planning and business reengineering in the private sector, and (6) a systematic method to translate the best practices in business to DON activities.

Revolution in Military Affairs (RMA). RMA centers on developing the improved information and C2 capabilities needed to significantly enhance joint operations.

User. A user is a data customer.

DON FUNCTIONAL DATA AREAS AND FUNCTIONAL DATA MANAGERS

Functional/Resource Area	**Resource Sponsor**	**Functional Data Managers** (Designated by Resource Sponsor)
Acquisition	SECNAV RDA	
Finance	SECNAV FM&C	
Civilian Personnel	SECNAV CP	
Administration	OPNAV N09B/HQMC AR	
Manpower and Personnel	OPNAV N1/HQMC MR&A	
Intelligence and Cryptology	OPNAV N2/HQMC I	
Logistics	OPNAV N4/HQMC I&L	
Readiness	OPNAV N4/HQMC PP&O	
Command, Control and Communications	OPNAV N6/HQMC C4	
Information Warfare	OPNAV N6/HQMC PP&O	
Modeling and Simulation	OPNAV N6/MCSC SE&I	
Weapons Planning and Control	OPNAV N7/HQMC	
Training	OPNAV N7/TECOM	
Resources, Requirements, and Assessments	OPNAV N8/HQMC P&R	
Scientific and Technical	OPNAV N091/MCCDC	
Test and Evaluation	OPNAV N091/MCOTEA	
Medical	OPNAV N093	
Naval Reserve	OPNAV N095	
Meteorology, Oceanography, GI&S	OPNAV N096	
Precise Time and Astrometry	OPNAV N096	
Religious Ministries	OPNAV N097	
Naval Nuclear Propulsion	OPNAV NOON	

ACRONYMS

ADS	Authoritative Data Source
ASN(FM&C)	Assistant Secretary of the Navy (Financial Management and Comptroller)
ASN(RD&A)	Assistant Secretary of the Navy (Research, Development and Acquisition)
C2	Command and Control
C3I	Command, Control, Communications and Intelligence
C4I	Command, Control, Communications, Computers and Intelligence
CRD	Capstone Requirements Document
CIO	Chief Information Officer
CMC	Commandant of the Marine Corps
CNO	Chief of Naval Operations
DMI	Data Management and Interoperability
DON	Department of the Navy
DoD	Department of Defense
ELINT	Electronic Intelligence
FDAd	Functional Data Administrator
IER	Information Exchange Requirement
IM	Information Management
IT	Information Technology
JMA	Joint Mission Area
JOA	Joint Operational Architecture
KPP	Key Performance Parameters

MCCDC	Marine Corps Combat Development Center
MCOTEA	Marine Corps Operational Test and Evaluation Agency
METL	Mission Essential Task List
MNS	Mission Need Statement
MTF	Message Text Format
ORD	Operational Requirements Document
PPBS	Planning, Programming and Budgeting System
POM	Program Objective Memorandum
SECNAV	Secretary of the Navy
TADIL	Tactical Digital Information Link
XML	Extensible Markup Language